

effectual separation and a free and easy external ventilation may be obtained. 8. Small wards of from fifteen to twenty beds are easily taken care of; the patients are less in each other's way; the chances of direct contagion are diminished; and all impurities are more rapidly removable. Such should be provided for ordinary patients, independently of the special arrangements made for certain categories of disease requiring still greater space or isolation in separate chambers. 9. The furniture of the wards should not obstruct the circulation of air; and the medical officers should possess the right of removing the curtains of the bed if they deemed this desirable. 10. The wards should be separated from each other by landings and other rooms; and it would be of advantage that one of these should be used for the reception, during the day and at meals, of all patients able to get up, which would lead to a daily, though incomplete, evacuation of the wards. 11. The periodical and regular evacuation of the wards, and their remaining unoccupied during several months in the year, have been attended with such advantages in the French military hospitals and some foreign hospitals, that the general adoption of this measure is desirable, and imperiously so during the prevalence of an epidemic. 12. Everything should be so disposed that all fetid and infecting matters, dejections, old dressings, foul water, etc., may be rapidly destroyed or removed, and never allowed to remain within or in the proximity of wards occupied by patients, or to give rise to any appreciable emanation.

"Enlightened by a prolonged discussion, in which many of its members have taken part, the Society would regret if, in the projected erection of the Hôtel Dieu, the administration misunderstood or neglected some of these principles. It believes that neither the wants of the population nor those of medical instruction require a hospital of 600 beds located in the city; and that such a hospital would be in a bad condition with respect to site, space, number of beds, disposition of its buildings, and ventilation. It is desirous that its views may be taken into consideration, and that they may contribute to the adoption of a plan conformable with the fundamental exigencies of hospital hygienics."—*Medical Times & Gaz.*, Dec. 17, 1864.

MEDICAL JURISPRUDENCE AND TOXICOLOGY.

66. *Poisoning by Laudanum treated by Electro-Magnetism and Belladonna.*—[The antagonistic powers of opium and belladonna, first pointed out in this country, and of which numerous examples have been recorded in this journal within the last few years, receives further confirmation from the following case communicated by Dr. PRESTWOOD LUCAS to the *Medical Times and Gazette* (Feb. 25, 1865):—ED. AM. JOURNAL.]

"A. P., aged 11, at 6.45 P. M. of December 15, 1864, swallowed an ounce and a half of laudanum, sent to her by mistake for a black draught. She soon became very drowsy, and perspired freely. Her breathing gradually becoming very heavy and oppressed, her mother at length became alarmed, and medical aid was sent for.

"I arrived at the house at 9.15 P. M., and found my friend Dr. Davies already there, preparing to introduce the stomach-pump. The child had been kept walking about the room between two persons, who perseveringly employed the usual physical means of rousing her consciousness. Her face was cold and livid; hands, arms, and feet cold; pupils contracted; pulse 96. She could be roused by shaking and loud speaking, and then knew every one around her, looking at them with a half-intoxicated expression—understanding all that was said to her.

"At 9.30 P. M. two scruples of sulphate of zinc dissolved in warm water were injected into the stomach. Only faint traces of laudanum were found in what was brought off the stomach, the remainder of that which had been swallowed having passed into the system.

"The stomach was afterwards well washed out at intervals with repeated injections of warm water, each injection being followed by one of strong coffee. A sinapized foot-bath, and, later, sinapisms to the calves of the legs were used.

"Instead of being incessantly walked about the room, she was taken to walk for about a hundred yards and back in the open air, and allowed to rest in the intervals. The drowsiness, however, kept increasing. At one o'clock A.M. she was comatose; the breathing stertorous; face flushed; respiration only six in a minute; pulse 100, small and feeble; pupils much contracted; could still be partially roused.

"At 1.30 could not be roused by shaking or loud speaking; occasional sub-tultus of the muscles of the arms and twitching of the eyebrows; lower jaw dropped, showing an incessant to and fro motion of the tongue; respiration 6; breathing stertorous.

"2.40. No improvement. Electro-magnetism applied at the upper cervical region and over the epigastrium, chest, and face. This soon roused her, so as to enable us to give her a teaspoonful of a solution of extract of belladonna of eight grains to the ounce.

"2.55. Electro-magnetism reapplied, and a teaspoonful of the solution given. Is more easily roused, but instantly falls asleep again; breathing still stertorous.

"3.20. Electro-magnetism; an enema administered of gruel, with six drachms of brandy and a teaspoonful of the solution.

"3.50. Electro-magnetism and a teaspoonful of the solution. She now rose up to the sitting posture, and got off the couch to walk across the room, supported by two persons, looking about her with an alarmed and bewildered expression, but apparently not recognizing any one. She was, however, sufficiently awake to drink a cup of strong coffee, taking the cup in her hand. Face becoming more flushed; pupils less contracted; pulse 104; respiration 6; less stertor when asleep.

"4.10. Electro-magnetism and a teaspoonful of the solution. Is easily roused; now sees and knows us.

"4.40. Enema as before, with the addition of two drachms of aromatic spirit of ammonia. Pulse 136; respiration 8; no stertor; face highly flushed.

"5.50. Electro-magnetism and a teaspoonful of the solution. Has now received sixteen grains of extract of belladonna. No stertor; respiration 8, attended with a soft sighing moan; pupils moderately dilated; is quite easily roused when spoken to; answers questions and begins to notice objects.

"From this time till 7 A.M. she was allowed to remain sleeping, reclining in an easy position on her left side, with her shoulders and head raised. She was only spoken to occasionally, to ascertain that she could be easily roused. A diffused flush overspread her face and forehead, and a pleasant warmth and moisture the whole body. Pulse from 140 to 150; respiration 11. At 12.30 P.M. was sleeping, breathing softly; very easily roused, and perfectly conscious when awake. Respiration 12; pulse 150; pupils moderately dilated. Had much thirst, and some irritability of stomach and vomiting in the afternoon. Next day pupils were much dilated. She had slight diarrhoea, and afterwards speedily recovered.

"In treating such a case as the one now detailed, of course the first and indispensable thing to be done must be to empty the stomach of its contents as speedily as possible, and then to wash its mucous surface thoroughly by injections of warm water. The usual methods of rousing the patient's consciousness by incessantly walking about, slapping their hands and limbs, etc., we soon forbade, believing that, owing to the fatigue and exhaustion produced by forced muscular efforts, much more harm than good would be done. With a like feeling we were very reserved in our use of electro-magnetism, apprehensive of the possible nervous exhaustion which a continued use of so powerful an agent might induce. Having first roused the patient out of the profound coma in which she lay, we afterwards applied it only just enough to enable her to take the solution which we gave her. We then allowed her to sleep until the next dose was to be given, and so on. We employed stimulants, external and internal, as has been described; but we could not help attributing the happy result in this case chiefly, if not altogether, to the influence of belladonna in counter-

acting the effects of the opium, of which so large a quantity had been taken into the system. But, at the same time, we found in electro-magnetism an invaluable resource; without it we could not have roused our patient to swallow anything.

"One of our highest authorities on the subject of poisons, to whom the particulars of this case have been communicated, considers the result to be owing to the vigorous measures we adopted, and believes that the belladonna had little or nothing to do with it; but as regards vigour of treatment, the usual methods of rousing the patient by physical efforts and stimulants completely failed. The narcotism became more and more profound, until at length the child could not be roused at all out of her unconsciousness. It was not until we had recourse to electro-magnetism and belladonna that any signs of improvement took place. If recovery was solely due to electro-magnetism, a very moderate application of it was sufficient in this case, and it would be well to remember this in the treatment of similar cases. But, it may be asked, how could a child of 11 years take sixteen grains of extract of belladonna in less than three hours, without experiencing any of its usual toxic effects, unless for the counteracting influence of the opium which had been previously taken? More importance might be attached to this argument had not Dr. Fuller shown, in a most interesting paper read by him to the Medico-Chirurgical Society, and published in the *Medical Times and Gazette* in July, 1859, the extraordinary tolerance of belladonna in young subjects. He described the tolerance of the drug as being so great that 'one child of 10 years took seventy grains of extract of belladonna daily, and a total amount of rather more than two ounces in twenty-six days. Another child of 14, to whom atropine was administered, took no less than thirty-seven grains in eighteen days! Whilst in adults two grains of the extract of belladonna daily would often induce vertigo and dizziness, and he found he could not establish a toleration of the larger doses, as in children.'

"This yet unexplained tolerance of belladonna in young subjects is, however, a question apart from that of its physiological relations to opium. The present case may not be considered as altogether fair evidence of the efficacy of belladonna, inasmuch as electro-magnetism was also employed in its treatment. But in Dr. Anderson's cases, in India, of opium poisoning, belladonna was the only remedy used. One of his patients in the course of thirty-six hours had swallowed two ounces of solution of hydrochlorate of morphia for delirium tremens. He was in a state of profoundest narcotism. He was made to swallow a drachm of tincture of belladonna in water every half hour. After the third dose the pupils began to dilate; in four hours and a half he was out of danger, having taken six drachms of the tincture. He also relates a similar case in which an ounce of the tincture in three ounces of water was given between 9 and 9.30 P. M., and in the course of the next half hour two drachms more were taken. At 2 A. M. all indications of opium poisoning had disappeared.

"On the other hand, as to belladonna poisoning, Mr. Bell's two cases are most striking. His patient had had a fourth of a grain of sulphate of atropine in solution injected over the sciatic nerve. Its toxic effects in due time declared themselves, and the patient's condition became 'altogether alarming,' and was without any indication of improvement. A strong solution of morphia was injected into the gluteal region of the opposite side, which happened to be next to the edge of the bed. Almost immediately an improvement was perceptible. In two hours and a half his worst symptoms had disappeared; the next morning he was, apparently, quite well. The other case was less alarming, but equally displayed the influence of opium as an antidote to belladonna. Nor should the cases recorded by Mr. Seaton, of Leeds, be forgotten, of the ten persons poisoned by eating the ripe berries of the *atropa belladonna*, in which opium was given with such signal benefit."

67. *Poisoning by the Endermic Use of Atropine.*—Dr. H. Ploss, of Leipsic, relates the following case. A man, aged 33, had an affection of the larynx, which Dr. Ploss regarded as being of a syphilitic nature. Another physician, however, being called in consultation, decided that the case was one of simple laryngitis, and ordered a blister to be applied round the neck, to be dressed on the following day with an ointment composed of 15 parts of sulphate of atro-